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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,706	09/06/2006	Naoto IKEGAWA	80079(302721)	3043
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EDWARDS ANGELL PALMER & DODGE LLP			EXAMINER	
P.O. BOX 55874			JACKSON, MONIQUE R	
BOSTON, MA 02205				
		ART UNIT	PAPER NUMBER	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/591,706

**Applicant(s)**

IKEGAWA, NAOTO

**Examiner**

Monique R. Jackson

**Art Unit**

1787

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/200)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

### **DETAILED ACTION**

1. The amendment filed 2/5/10 has been entered. Claims 1-16 are pending in the application. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Claim Objections***

2. Claims 11 and 12 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 11 recites the "method as set forth in claim 10 comprising the step of performing a plasma treatment to the surface of said substrate prior to formation of said metal layer" however amended claim 10 now includes a plasma treatment step prior to the metal formation step. Similarly, Claim 12 recites the "method as set forth in claim 10, wherein said metal layer is formed by physical vapor deposition" however amended claim 10 now recites "forming a metal layer on a surface of said substrate by physical vapor deposition of a metal onto said plasma-treated substrate". Hence, original dependent claims 11 and 12 fail to further limit the subject matter of currently amended claim 10.

#### ***Claim Rejections - 35 USC § 103***

3. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brissot (US 2004/0110890 A1) in view of Furuta et al '004 or Okamoto et al (USPN 7,063,892, hereinafter referred to as Okamoto I) or Okamoto et al (USPN 7,014,921, hereinafter referred to as Okamoto II) or Okamoto et al (USPN 6,797,345, hereinafter referred to as Okamoto III.)

4. Brissot teaches a polyester composition for appearance parts wherein the polyester composition contains a) about 1 to about 40 percent by weight of an ethylene/acrylate ester copolymer, b) about 35 to 90 percent by weight of a semicrystalline polyester such as an isotropic or liquid crystalline polyester, and c) about 5 to about 30 percent by weight of short fibers or whiskers having a number average diameter of about 6 microns or less and an aspect ratio of about 200 or less, preferably about 5 to about 20 (*reads upon instant claims 5-6; Abstract; Paragraphs 0008-0016 and 0022.*) Brissot teaches that the ethylene copolymer consists essentially of repeat units from ethylene, and a compound of the formula  $H_2C=CHCO_2R^1$  (I), wherein  $R^1$  is an alkyl group containing 1 to 8 carbon atoms, and said ethylene-derived repeat units are about 65 to about 95wt% of said copolymer and (I)-derived repeat units are about 5 to about 35 wt% of said copolymer (*reads upon the claimed ethylene content and ester unit content; Paragraph 0009.*) Brissot teaches that the composition can be molded to form shaped parts that can be further painted or coated, such as reflector substrates wherein the molded substrate may be coated with metal by a variety of known methods such as vapor phase deposition and metal sputtering (*reads upon the claimed PVD process; Paragraphs 0028-0035.*) Brissot teaches that the semicrystalline polyester is preferably as recited in paragraph 0019 and their copolymers containing small amounts, less than 30 mol percent of the diol and/or diacid components, of other monomers (Paragraph 0019.) Brissot discloses examples wherein the composition is injection molded at a melt temperature of 260-285°C and a mold temperature of 110°C with one example including ethylene/n-butyl acrylate/glycidyl methacrylate (67/28/5wt%) copolymer as the ethylene copolymer in an amount of 5wt% (*reads upon claimed epoxy-group containing ethylene copolymer; Examples, particularly example 5.*) Hence, Brissot provides a suggestion to

utilize the ethylene/n-butyl acrylate/glycidyl methacrylate copolymer as in example 5 as the ethylene copolymer in the polyester composition which can comprise a liquid crystalline polyester as the semi-crystalline polyester, wherein the polyester composition can be further coated with a metal by a PVD method as claimed. Though Brissot teaches that the metal coating can be conducted by a variety of known methods including vapor phase deposition and metal sputtering, Brissot does not specifically teach plasma treating the polyester molded substrate prior to metal coating as instantly claimed. However, plasma pretreatment is an obvious method of polymer surface treatment to improve adhesion of the subsequently applied metal coating and would have been obvious to one having ordinary skill in the art at the time of the invention given the predictable results and reasonable expectation of success. Further, Furuta et al or Okamoto et al I, II, or III (*entire documents*) all teach that liquid-crystalline polyester substrates can be subjected to a plasma surface treatment prior to lamination with a metal layer, including a metal coating by a vapor deposition method, to form a liquid-crystalline polyester metal laminate, and hence further support the Examiner's position of obviousness with respect to the plasma pretreatment. Regards to the type of liquid crystalline polyester or type of metal utilized, though Brissot teaches that the polyester can be a liquid crystalline polyester and the composition can be utilized in various applications including electronic devices and can be coated with metal, Brissot does not specifically teach the LCPs and metals as claimed however the claimed polyesters and metals would have been obvious to one having ordinary skill in the art in view of Furuta et al or Okamoto et al I, II, or III which disclose the claimed LCPs that read upon the claimed polyesters as well as the instantly claimed metals such as aluminum, copper, and nickel, and also disclose that the metal can be formed in a circuit pattern as claimed based upon the intended end use of

the polyester/metal laminate. Hence, it would have been obvious to one having ordinary skill in the art to utilize any of the liquid crystalline polyesters known in the art such as those disclosed by the cited secondary references in the invention taught by Brissot and to further provide any of the metals disclosed by the references as the metal coating taught by Brissot in a desired pattern based upon the intended end use. With regards to claim 7, Brissot also teaches that the composition may include other materials normally found in thermoplastic composition such as antioxidants, pigments, other fillers, lubricants, plasticizers, nucleating agents, and flame retardants (paragraph 0026) but does not specifically teach that the shape of these additives or fillers is “plate-like” as in instant claim 7, however “plate-like” is an obvious shape for various conventional fillers materials utilized in the art and would have been obvious to one having ordinary skill in the art at the time of the invention. Lastly, with regards to Claim 13, though Brissot teaches a heat treatment step, Brissot does not specifically teach the claimed temperature range, however, one having ordinary skill in the art at the time of the invention would have been motivated to determine the optimum temperature range for the heat treatment step based upon the particular polyester composition utilized in the invention taught by Brissot, given the predictable results and reasonable expectation of success, wherein temperatures as claimed are typical in the art.

5. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuta et al '004 alone, or in view of Furuta et al '532, for generally the reasons recited in the prior office action and in further view of Okamoto I, Okamoto II or Okamoto III. The detailed teachings of Furuta et al '004 and Furuta et al '004 in view of Furuta et al '532 with respect to the claimed invention can be found in the prior office action. Though Furuta et al '004 teach that the liquid

crystalline polyester metal laminate is formed by laminating a metal foil to the polyester substrate, the Examiner maintains her position that deposition methods such as the claimed physical vapor deposition process would have been obvious to one having ordinary skill in the art as a functionally equivalent method of producing the LCP/metal laminate as further supported by Okamoto I, II or III. Specifically, Okamoto I and III teach that a liquid crystalline polyester metal laminate can be produced by one of four comparable methods including solution casting a polyester film and the laminating with a metal foil (method 1), using the film formed in method 1 crimped under heat to paste on a metal foil (method 2), using the film formed in method 1 laminated to a metal foil with an adhesive (method 3), or formation of the metal layer by vapor deposition on the liquid crystalline polyester film such as by sputtering or glow discharge (method 4); wherein the liquid crystalline polyester film can be surface treated by plasma treatment prior to lamination or vapor deposition of the metal as claimed (Okamoto I: Col. 10, lines 28-58; Okamoto III: Col. 7, lines 6-27; Col. 8, lines 9-39.) Similarly, Okamoto II teaches three methods including: 1) laminating the film with a metal foil by thermocompression, 2) bonding the film to a metal foil with an adhesive, and 3) forming a metal layer onto the film by vapor deposition; wherein when the film can be subjected to plasma treatment prior to applying the metal layer to enhance adhesion between the film and the metal (Col. 9, lines 47-55; Col. 10, lines 4-10; Hence, it would have been obvious to one having ordinary skill in the art at the time of the invention to form the polyester metal laminate taught by Furuta et al '004 by a physical vapor deposition process of the metal layer onto the polyester wherein the polyester has been subjected to a plasma surface treatment step prior to formation of the PVD metal layer, given the

teachings of Okamoto I, II or III as discussed above with regards to the functional equivalence of the laminate formation methods.

***Response to Arguments***

6. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R. Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 10:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Monique R Jackson/  
Primary Examiner, Art Unit 1787  
May 10, 2010